User's Manual

AXIS Camera Recorder

Video recording and monitoring software

AXIS COMMUNICATIONS

About This Document

This manual is intended for administrators and operators of Axis Camera Recorder and is applicable for software version 1.1. Later versions of the document will be posted to the Axis Web site, as required.

Previous experience of networking will be of use to the reader when installing and using this product.

Legal Considerations

Camera surveillance may be prohibited by laws that vary from country to country. Check the laws in your local region before using Axis Camera Recorder for surveillance purposes.

Liability

Every care has been taken in the preparation of this manual. Please inform your local Axis office of any inaccuracies or omissions. Axis Communications AB cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. Axis Communications AB makes no warranty of any kind with regard to the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Axis Communications AB shall not be liable nor responsible for incidental or consequential damages in connection with the furnishing, performance or use of this material.

Trademark Acknowledgments

Acrobat, Adobe, Boa, Ethernet, IBM, Internet Explorer, LAN Manager, Linux, Macintosh, Microsoft, Milestone, Netscape Navigator, OS/2, UNIX, Windows, WWW are registered trademarks of the respective holders. Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. Axis Communications AB is independent of Sun Microsystems Inc.

Axis Support Services

Should you require any technical assistance, please contact your Axis reseller. If your questions cannot be answered immediately, your reseller will forward your queries through the appropriate channels to ensure a rapid response.

If you are connected to the Internet, you can:

- Download user documentation and firmware updates.
- Find answers to resolved problems in the FAQ database. Search by product, category, or phrases.
- Report problems to Axis support staff by logging in to your private support area.

Visit the Axis Support Web at www.axis.com/techsup/

Axis Camera Recorder User's Manual.
Revision 1.01
Part number: 20597
Dated: September 2003
Copyright © Axis Communications AB, 2003
Powered by Milestone.

Table Of Contents

Introduction 4
Installation Guide 5
Overview 5
System Requirements 6
Installation 8
Help & Support 9
Devices - Quick Setup 10
The Administrator Application. 13
Devices - Detailed Setup Information 14
Changing Device Settings 15
Configuring Monitors and the Layout 17
Setting Image Quality and Recording Conditions 18
Calibrating Motion Detection 22
Defining Motion Detection Exclude Areas 24
Setting Up and Using PTZ Preset Positions 25
General Settings 27
E-mail Setup 28
Scheduling Camera Activity and Alert Periods 29
Setting up Schedules - an Example 30
The Monitor Application 32
Tools and options available in the Monitor window 33
The Pan/Tilt/Zoom Panel 34
Using the Recordings Browser 35
Features in Advanced Mode 37
Appendix A - Inputs and Outputs 39
Advanced Control with Input Devices 39
I/O Control 42

Introduction

Axis Camera Recorder is a powerful and flexible surveillance solution that turns your TCP/IP-based Axis network cameras and video servers into a sophisticated digital video surveillance system - all fully controlled from your PC.

Axis Camera Recorder provides these main features:

- Record from and view cameras at up to 30 frames per second (25 for PAL)
- Control up to 16 cameras per installation/license
- Secure image database with recovery options
- Automatic database resizing for continuous recording at low disk space
- Scheduled recording on time and/or event
- Advanced motion detection with exclude filter for image areas of no interest
- Limit recordings to images with motion, all images or no images
- Receive motion alerts via e-mail
- All system messages on-screen, in log files and optionally via e-mail
- Find specific recordings by date/time or event
- Playback of recordings in real-time, or at controllable speed and play direction
- Control of PTZ cameras
- Up to 25 PTZ preset positions per camera for fast PTZ
- Advanced input/output control
- Export single images and video sequences and print reports

Installation Guide

This installation guide will help you install Axis Camera Recorder and configure it for your Axis Network Cameras and Video Servers. The guide also provides a brief introduction to the functionality and usage of the surveillance software.

Overview

Axis Camera Recorder consists of two distinct software applications: Administrator and Monitor. These are described briefly below.

The Administrator application - The administrator of the surveillance installation uses this tool when setting up the system for the first time, when new cameras are added to the system and whenever the system configuration needs to be changed. This tool is also used to configure the screen layout to use while operating the system, the recording conditions to use, etc.

The Monitor application - This application forms the main user interface and is the core of the surveillance system. The Monitor records and displays live images from the connected video cameras and the operator uses this application for surveillance. Operators can start and stop cameras, control PTZ cameras (if installed), review recordings, create AVI files, export and print images, etc.

Notes:
- The Administrator application and the Monitor application cannot be run simultaneously - the one must be closed before the other is opened.
- In order to achieve the best performance and most reliable operation, it is recommended that the surveillance PC is not used for other demanding software applications or unnecessary purposes.
- The Monitor application and cameras must be running to record images. There will be no video surveillance if the Monitor application is closed!

System Requirements

Before installing, you should be aware of the various requirements that will apply for your application, and in particular for the desired frame rate. The values shown below are obtained from real-life tests.

Minimum Processor Requirements for Frame Rates

PAL Cameras	10 fps, medium compression	10 fps, high compression
1 camera	P4, 1,0 GHz	P4, 1,0 GHz
4 cameras	P4, 1,0 GHz	P4, 1,0 GHz
8 cameras	P4, 1,8 GHz	P4 1,0 GHz - P4, 1,8 GHz
16 cameras	P4, 3,06 GHz	P4, 1,8 GHz

PAL Cameras	25 fps, medium compression	25 fps, high compression
1 camera	P4, 1,0 GHz	P4, 1,0 GHz
4 cameras	P4, 1,8 GHz	P4, 1,8 GHz
8 cameras	P4, 3,06 GHz	P4, 3,06 GHz
16 cameras	N/A	N/A

Approximate Total Frame Rates for Various Configurations

PAL Cameras	P4 1,0 GHz, Medium compression	P4 1,8 GHz, Medium compression	P4 3,06 GHz, Medium compression
1 camera	25	25	25
2 cameras	50	50	50
4 cameras	80	90	100
8 cameras	65	140	170
16 cameras	50	160	200

RAM

In general, the better the PC's processor, the better the frame rate. The amount of RAM available is of less importance for the frame rate, but is important for Axis Camera Recorder's overall performance. In general, the amount of RAM required is dependent on the number of cameras in use. For up to 8 cameras - use 512 MB, and for 9-16 cameras - use 1024 MB.

UPS

Whilst not absolutely essential for operation, using an Uninterruptible Power Supply (UPS) for the computer running Axis Camera Recorder is highly recommended.

Hard Disk Space

The amount of disk space required can be roughly calculated from the table below. Always add a further 5-10% disk space as a safety margin.

Average File Size	Stored Images	Disk space (GB)
15 KB	60 000	1
15 KB	150 000	2.1
15 KB	600 000	9
25 KB	60 000	1.8
25 KB	150 000	3.9
25 KB	600 000	15
35 KB	60 000	2.1
35 KB	150 000	5.2
35 KB	600 000	21

Axis Network Camera and Video Server Requirements

The Axis cameras and video servers used with Axis Camera Recorder must be installed with the firmware release 2.34 or later. The following network cameras are supported: AXIS 2100, AXIS 2110, AXIS 2120, AXIS 2130, and the AXIS 2420. Supported video servers; AXIS 2400, AXIS 2400+, AXIS 2401, AXIS 2401+, AXIS 2411.

Software Requirements

Item	Notes
Operating System	Microsoft Windows 2000 Professional, or XP Professional, or NT 4.0 (SP3 or later). Using the operating system's latest Service Pack is highly recommended.
Protocols, API's, Software	TCP/IP support. Microsoft Internet Explorer 5.0 or higher.
Incompatible software	FTP-Server: already included in Axis Camera Recorder. Do not run other FTP servers on the same port number or change the default port number used by the Axis Camera Recorder FTP-Server.

Important!

The Windows computer used for Axis Camera Recorder must be NTFS-formatted.

Installation

Step 1 - Locate your Serial Number

To install the full retail version of Axis Camera Recorder a valid license code must be entered. This is the same as the serial number found in the software retail box.

A serial number is not required to install the Demo version of the program.

Step 2 - Connecting Devices

Connect your Axis cameras/video servers to your Local Area Network. Consult the manuals for these products for more information.

To verify that the camera/video server is successfully installed on your network, connect to it from a standard browser. If you cannot connect using a browser, then you will not be able connect from Axis Camera Recorder either.

Step 3 - Installing the Software

Insert the Axis Camera Recorder CD-ROM into the CD-ROM drive of your computer. The installation program will start automatically if Auto-Run has been enabled. Otherwise, run the program acr.exe - which is found in the root directory of the CD-ROM.

If a previous version (or the demo version) exists on the system, the installation program will recommend that the earlier version is removed. After doing so, the installation program must be started once again for the actual installation.

Next you will be asked to accept the product license agreement. This agreement is also supplied with the product in printed form. If you do not accept the license agreement, select No and the installation will terminate. Otherwise, select Yes and the installation will proceed.

You will be asked to enter your name, company name and the product's serial number (License Code). Enter the whole serial number, including the hyphens. Do not include any blanks.

The rest of the installation process should be self-explanatory.

Before the installation finishes, you can choose if a shortcut to Axis Camera Recorder should be added to the desktop.

If a demo version of Axis Camera Recorder was already installed, it will be necessary to remove the image databases. This can be done either by uninstalling the demo version or by clearing each camera database from within the new version of the Axis Camera Recorder software. See also *Setting Image Quality and Recording Conditions,* on page 18.

Step 4 - Configure for First Use

After installing the software, it must be configured for your cameras and/or video servers. You will also need to configure the screen layout for the Monitor application. This is done by using the Administrator application. Please see *Devices - Quick Setup,* on page 10, for more information. See also *The Administrator Application,* on page 13, for a more detailed explanation of the Administrator functionality.

Help & Support

The Administrator and Monitor applications are both supplied with context-sensitive help for all the available functionality.

Help is obtained by clicking the question mark icon in the program's active window (or in some windows the Help button). The cursor changes to a *"What's this?"* cursor and you can then click on the item you need help with.

If you have questions or problems that are not addressed in this manual, contact your Axis dealer or visit the Axis support web at: www.axis.com/techsup/

Please remember to register your software at www.axis.com

Devices - Quick Setup

This short description will help you set up your first device, without going into too much detail. It is assumed that the software has already been successfully installed.

1. Start the Administrator application and click the Add Device... button. The Device Setup Wizard starts.

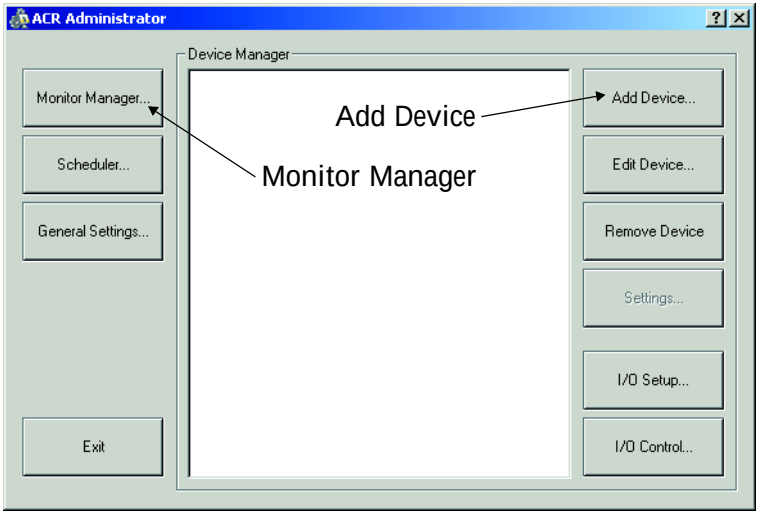

Figure 1 - The main Administrator window.

2. Enter the IP address of the Axis camera/video server.
3. Click Next and enter the administrator password for the device.
4. Click Next to auto-detect the device. If successful, the device type and MAC address (S/N) will be shown.
5. Click Next and give the device a descriptive name.
6. Click Finish to return to the Administrator. The new device will now be shown in the Device Manager window.

Now that a device has been added we need to configure the layout of the Monitor application.

1. Click the Monitor Manager button in the Administrator.

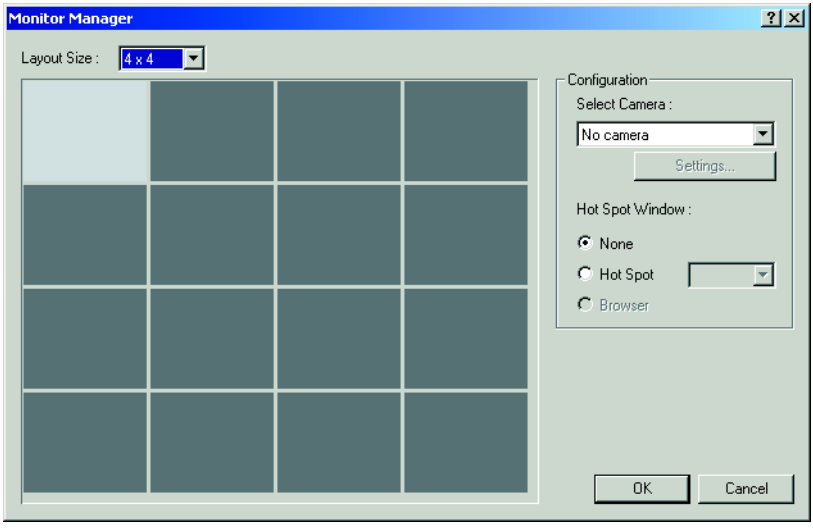

Figure 2 - The Monitor Manager window.

2. Select a *Layout Size* (e.g. 2x2 = 4 cameras) and click on one of the monitor windows. The selected monitor window turns light grey.
3. Select a camera for the active monitor window. An image from that camera will be shown in the monitor window.
4. Click the OK button to exit the Monitor Manager.

Click the Exit button to close the Administrator. It is not possible to run both applications at once, so the one must always be closed before opening the other.

1. Now open the Monitor application and click the Manual button. This enables the Start, Start All and Stop All buttons.
2. Click on the monitor window for the camera - this makes it the active monitor window.
3. Now press the Start button to start fetching images from the camera. The Start button turns into a Stop button.
4. Click the Exit button when finished.

If you have problems setting up your first device, please see *The Administrator Application,* on page 13, which describes in more detail how to:

- Change image quality and compression for a camera
- Change the recording conditions for a camera
- Calibrate motion detection
- Set up PTZ preset positions
- Enable e-mail alerts
- Start and stop cameras automatically, at preset times (Scheduling)

The Administrator Application

The Administrator application is used when setting up the system for the first time, when new cameras or video servers are added to the system, and whenever the system configuration needs to be changed. It is also used to configure the layout of the Monitor application, which recording conditions to use, etc. The Administrator is started from the Program Menu.

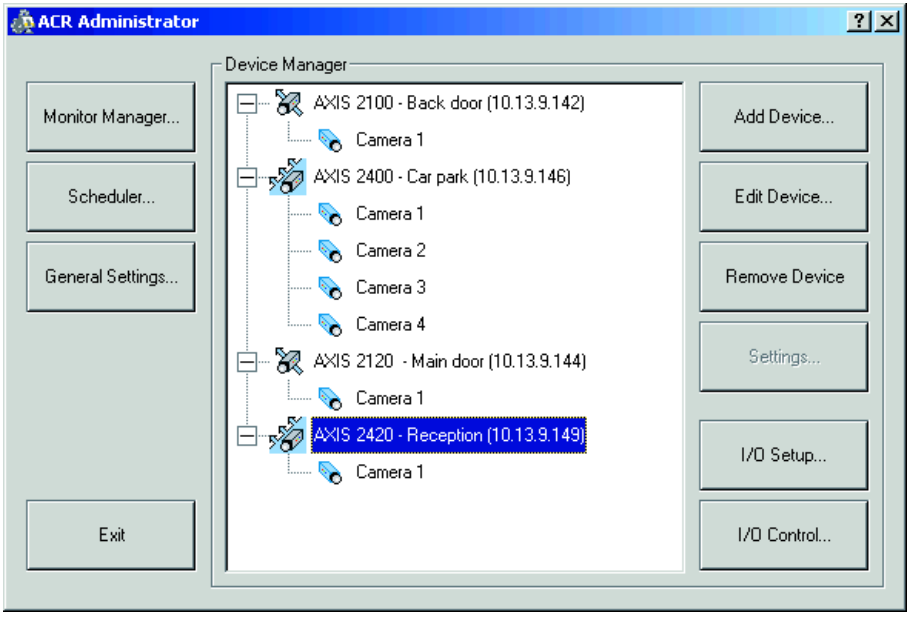

Figure 3- The Administrator window, showing several configured cameras and video servers.

The main window provides the following buttons:

- Monitor Manager - Set up the screen layout and positions for cameras, etc. See *Configuring Monitors and the Layout*, on page 17.
- Scheduler - Control when cameras start and stop and when alerts are sent. See *Scheduling Camera Activity and Alert Periods*, on page 29.
- General Settings - Set up log files, screen updating and e-mail. See *General Settings*, on page 27.

- Add Device - Add new cameras or video servers. See the previous section *Devices - Quick Setup,* on page 10 and the more detailed section *Changing Device Settings*, on page 15.
- Edit Device - Edit/update the configuration of an existing device.
- Remove Device - Removes an existing device from the system.
- Settings - Set up image quality and recording conditions, etc. for the camera. See *Setting Image Quality and Recording Conditions,* on page 18.
- I/O Setup - Define inputs and outputs to use in the system. Inputs can be used to create an alert or start/stop a camera. Outputs can activate the output ports on selected devices and thus activate e.g. a siren or a light. See also *Inputs and Outputs*, on page 39.
- I/O Control - Set up defined inputs to activate selected outputs. Several inputs can activate the same output. Both external inputs and timer events can be used to activate an output.

Devices - Detailed Setup Information

This section goes into more detail about the process covered in *Devices - Quick Setup,* on page 10, and describes the various options available while using the Device Setup Wizard.

IP address - The camera/video server uses this IP address on the network. This will be the address you used to initially install the device.

Port Setup - The HTTP and FTP protocols usually communicate on the standard ports 80 and 21, respectively. If these values have been changed in the camera/video server, then enter these values here. This is used if several devices share the same IP address (e.g. when behind a router). In most cases it will not be necessary to change the default ports.

Password - An administrator account is used to configure the connected camera or video server. Enter the password for the device's default administrator account *root*.

Autodetect Device - For the fastest detection, select the video device type manually. Alternatively, select Autodetect Type and let the system find the device type.

MAC address (S/N) - This is the hardware address of the camera/video server, e.g. 00408c291ba2 and it corresponds to the serial number found on the product's serial number label. This is the MAC address used to initially install the device.

Name - The name for the camera/video server should reflect its usage or location. Note that two devices cannot use the same name.

Camera Setup - Used to set up/modify camera names and PTZ devices for the device. For example, the AXIS 2400 video server uses the default camera names Camera 1, Camera 2, etc., which can be changed here. PTZ devices (PTZ cameras or fixed cameras on PTZ heads) can be enabled, and the COM port and PTZ driver can be selected. For more detailed information see *Configuring Video Servers* below.

After a device has been successfully added, a new device icon will appear in the Device Manager window.

Changing Device Settings

The settings described above for adding a new device can all be modified simply by selecting the device and clicking Edit Device...

Configuring Video Servers

For video Servers, you must specify if the connected cameras are Pan/Tilt/Zoom cameras or not. You can also give names to individual cameras. To do this, select the video server in the device list and then click the Edit Device button. Then click the Camera Settings button to access the cameras connected to the server.

- Check the box provided to indicate if any of the cameras connected to the video server are Pan/Tilt/Zoom cameras.
- P/T/Z type controlled through COM port - If you are controlling the PTZ functionality of one or more cameras via the server's COM port(s) - select the correct PTZ driver type in the list box.
- The camera list box shows one line for each camera connected to the Video Server. The first camera will correspond to the first video input on the server, and so on. Click on a camera name to select it and then modify any of the following:
  - Camera Name - Enter a name for the camera, preferably one that says something about its location. e.g. *Main Entrance*.
  - Camera Type - If the camera is a PTZ camera select *Movable*, otherwise select *Fixed*.
  - Device Port - Enabled if Camera Type is set to *Movable*. Select the port on the Video Server that controls the PTZ functionality.
  - Port Address - Enabled if Camera Type is set to *Movable*. Specify the camera's port address, normally 1 or 0. If using daisy-chained PTZ cameras, the port address identifies each camera. Please refer to the device's manual for more information.
  - Now click the Apply button, which updates the information shown in the camera list box. Press the OK button when finished.

Configuring Monitors and the Layout

Once the software has been configured for your cameras and video servers, you should then set up the screen layout for the Monitor application, and specify where each camera should be displayed on the screen.

In the Administrator, click the Monitor Manager button.

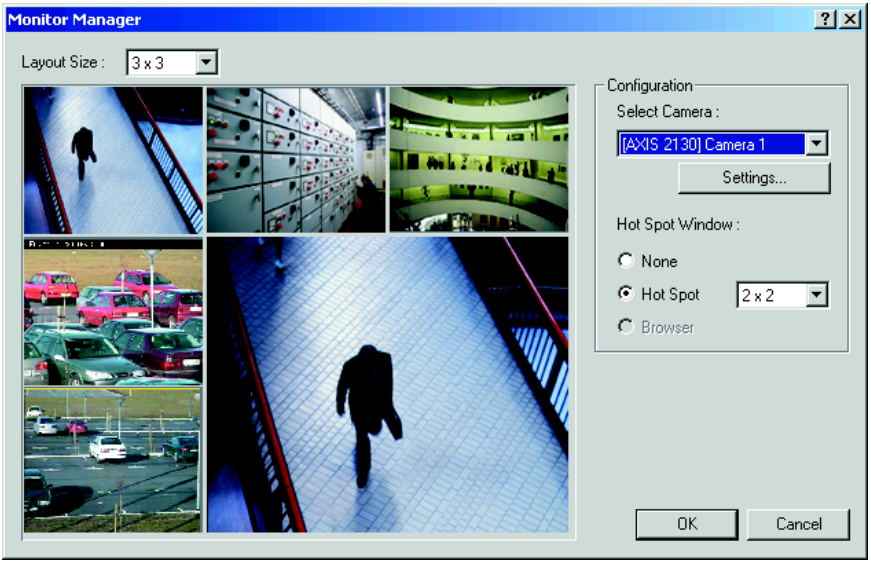

Figure 4 - The Monitor Manager window.

The Monitor Manager provides the following options:

Layout Size - Select how many monitors (i.e. camera windows) to display on the screen. A maximum of 16 windows can be displayed. Select from 1x1, 2x2, 3x3 or 4x4.

Hot Spot Window - This special window can be used for various purposes and will, when enabled, occupy up to 9 (3x3) of the available windows, depending on the layout in use. The Hot Spot window can show an enlarged view from one camera, it can be used for interactive PTZ control, or it can be used to browse through previously recorded images (Quick Browse). To use the function, select Hot Spot and the desired window layout.

Select Camera - To assign a camera to a particular monitor window, select that window by clicking it and then select the camera to display there. Note that each camera can only be displayed in one monitor window.

Settings... - This button takes you directly to the Camera Settings dialog for the selected camera. These settings can also be accessed from the main Administrator window. See below for more information.

Setting Image Quality and Recording Conditions

Image quality, recording speeds, and other recording conditions can all be set for each connected camera.

From the tree view of the connected cameras in the main Administrator window, select the camera to configure and click the Settings... button. The Camera Settings dialog appears. This can also be opened by selecting the Settings... button from the Monitor Manager, as described above. The following settings are then available:

Record Settings

Desired Recording Speed - The desired recording speed is the number of frames to retrieve from the camera each second, minute or hour. This allows for a frame rate ranging from 24 images per day up to 30 images per second (25 images per second for PAL). The expected time between each image is also calculated and displayed.

Images saved in the database - Select which images will be saved. When selecting *Images with motion*, only images where the level of detected motion exceeds the given limit will be saved.

Save images within ... - If *Images with motion* has been selected as the recording condition, it is then also possible save images from immediately before and after the alarm, i.e. when the detected motion exceeds the given limit. These images are constantly buffered for the selected period (e.g. 5 seconds before and after) and are thus always ready to be stored when the alarm occurs.

Camera Monitor Setup

Show Motion - Select this if you want the detected motion to appear highlighted in the image. If selected, the areas of the image with motion will be shown in the selected color. The color is selected by clicking the Motion Color button.

Show Regions - Select this to highlight the areas where motion detection has been excluded (disabled). If selected, these areas will be shown in the selected color, which in turn is selected by clicking the Region Color button in the Exclude Regions Settings.

Update on motion only - Select this option if you only want the camera to update on your screen when motion is detected. Enabling this option greatly reduces the workload of the PC.

Note: Screen updating can be disabled completely in the General Settings.

Database Settings

This is where you specify the number of images to store in the image database, as well as its location on the local hard disk. A separate database is used for each camera.

Max. images in database - Select this opption to limit the image database for the camera to a maximum number of images. When the maximum number of images has been recorded, the oldest image is automatically deleted each time a new image is saved. The maximum number of images that can be saved for each camera is 600.000. A few examples of the number of images that can be saved for each camera database are shown below:

- Frame rate = 6 fps, images saved = “All images” --> almost 28 hours
- Frame rate = 30 fps, images saved = “Images with motion” and motion occurs less than 23% of the time --> 24 hours
- Frame rate = 1 fps, images saved = ”All images” --> almost one week

For all cameras combined, a maximum total of 160 GByte can be saved.

Delete images older than - (in minutes, hours or days). Select this to limit the recordings in the database by age. When selected, images will automatically be deleted when older than the specified age. Note that it is not possible to store more than 600.000 images per camera, even if the maximum age is set as very high.

Database Path - Specify the directory for the image database. The specified directory must already exist, as it will not be created automatically. For the best performance, it is recommended that you specify a location on a local hard disk, and not on a network drive. Click the Browse path (...) button to browse to the database path directory.

Clear Database... - Click this button to delete all images recorded for this camera. Caution: All recordings for this camera will be permanently lost.

In Case Of Database failure... - In case of an image database failure, two options are available. The image database can be repaired, or it can be deleted on Monitor startup. Note that database repair is very time-consuming.

If recordings are larger than expected, or if the available disk space is suddenly reduced in some other way (e.g. by a disk error), an automatic database resizing procedure will automatically take effect. The size of the existing databases will be reduced, so that a percentage of the oldest recordings will be deleted and each database will temporarily be limited to its new size. You will be informed of this on-screen, in the log files and optionally via e-mail, if this has been activated. When the Monitor application is next restarted, the old database sizes will then be used. It is therefore up to the user to adopt the new sizes or otherwise solve the disk size problem.

Motion Detection Settings

This provides access to setting up motion detection for the camera:

Motion Detection... - Click this button to calibrate the motion detection. See *Calibrating Motion Detection,* on page 22.

Motion Color... - Allows you to select a new color for indicating detected motion.

Exclude Regions Settings

It is also possible to set up regions for the camera that should be excluded from motion detection.

Exclude Regions... - Click this button to specify the areas to exclude. See also *Defining Motion Detection Exclude Areas,* on page 24.

Region Color... - Select a color for the excluded region.

Image Quality...

This activates the Configure Device dialog, where the camera image quality, including the image size and its compression, can be set up. A preview image can be shown with the current selected settings.

Outputs...

Click this button to define which outputs (on any device/camera in the system) will be controlled by this camera. Outputs can be controlled by detected motion on this camera, or manually by buttons provided in the monitor. These buttons are displayed whenever the camera is selected and up to 5 buttons (i.e. for 5 outputs) can be configured per camera. Simply locate the required output from the list and then use the arrow buttons to add it to the On Manual Control panel (i.e. a button is created) or add it to the On Motion Detection panel. If required, the output can be controlled by both methods.

Note: To define outputs, click the I/O Setup button in the main Administrator window.

PTZ Preset Positions...

This button is only shown for Pan/Tilt/Zoom cameras. Up to 25 preset positions per *absolute* positioning PTZ camera can be defined in the PTZ Preset Positions dialog box activated by this button. Each preset position can later be accessed in the Monitor application.

For *relative* positioning PTZ cameras, the preset positions defined in the device itself will be listed and used instead. These preset positions must be defined in the device's web interface before they will be available in the Axis Camera Recorder software.

For detailed information about PTZ preset positions and how to use them, see *Setting Up and Using PTZ Preset Positions,* on page 25.

Calibrating Motion Detection

The motion detection system can control (a) when images are saved to disk, and (b) when alarms are generated, and is therefore a vital element of the system.

Motion detection requires careful calibration or it will not function properly. Follow the instructions below.

It is recommended that any regions that should be excluded are from motion detection are configured before calibrating motion detection. See page 24.

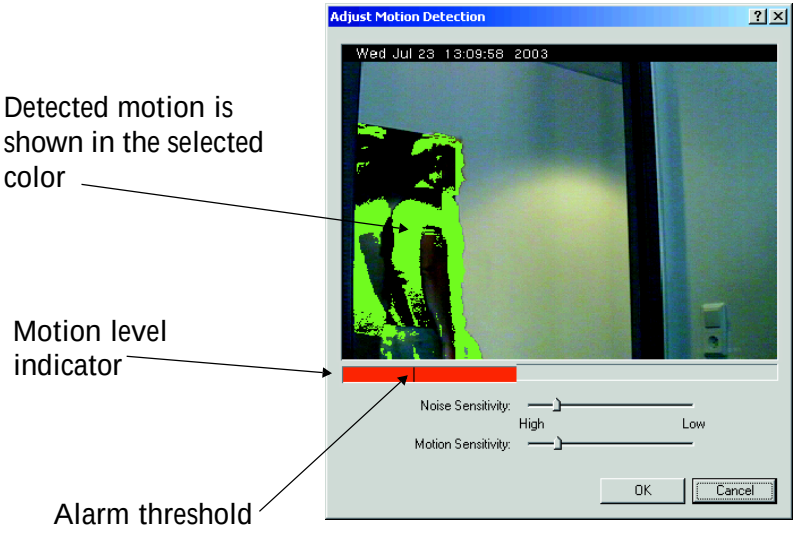

Figure 5 - The Motion detection window.

Motion Level Indicator - Indicates the current level of detected motion in the image. The indicator is green when the level is below the threshold and red when the threshold is exceeded.

Alarm Threshold Indicator - Indicates the selected motion alarm threshold. An alarm will be generated when the motion level goes beyond the threshold.

Noise Sensitivity Slider - Adjusts the noise sensitivity level of individual picture elements (pixels). The noise sensitivity level determines when the change in light intensity and color (light change) of individual pixels should be considered noise (i.e. an insignificant change) and when it should be considered motion (i.e. a significant change). In the live updating camera image, the pixels where motion has been detected are displayed with the selected motion color (green by default).

To get an idea of how this works, try dragging the slider to high and watch how the whole image turns green. Drag the slider back to the optimal position, i.e., where only the pixels affected by significant light changes are shown with the motion color.

Motion Sensitivity Slider - Adjusts the sensitivity to motion. This controls the alarm threshold and thereby determines the minimum size of an object that will generate an alarm. Drag the slider until the alarm threshold indicator is at the optimal position.

Note: Some video cameras generate undesired noise in poor light conditions. To avoid generating undesired alarms, it may be necessary to reduce the noise sensitivity or to improve the lighting at the viewed location.

Defining Motion Detection Exclude Areas

Areas that should not be included in the motion detection area can be excluded from the image by marking the relevant areas in the Exclude Regions settings.

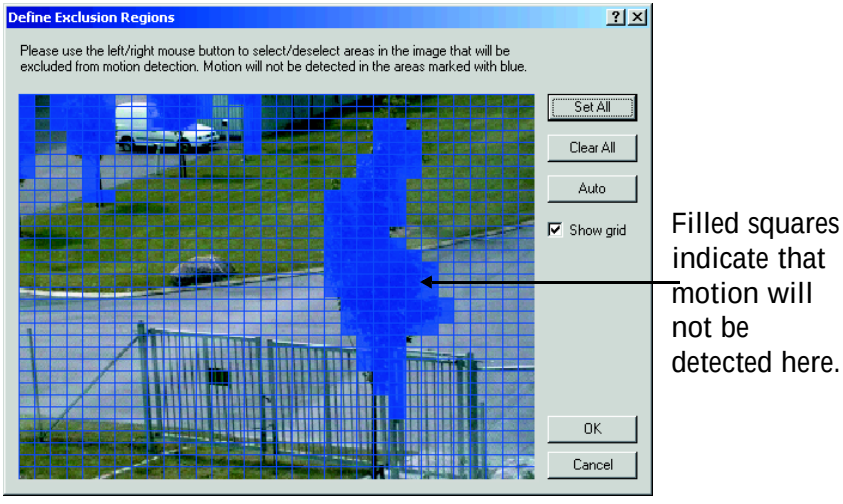
Define Exclusion Regions
Please use the left/right mouse button to select/deselect areas in the image that will be excluded from motion detection. Motion will not be detected in the areas marked with blue.
Set All
Clear All
Auto
Show grid
OK
Cancel
Filled squares indicate that motion will not be detected here.

Figure 6 - The Exclude Regions dialog.

Clicking in the image with the left mouse button will exclude squares from the motion detection, as shown above, and clicking with the right button will include them. It is also possible to Set All - include all squares in the image in the motion detection, or to Clear All - exclude all squares from the motion detection.

Also available is the Auto function. This will automatically detect and exclude “noisy” areas from motion detection. Note that motion detection must be reasonably well calibrated before this will work properly.

Show grid - Shows or hides the grid lines.

Setting Up and Using PTZ Preset Positions

Up to 25 PTZ preset positions (PP's) can be created for absolute positioning PTZ cameras. These are then accessible in the Monitor application's control panel. For relative PTZ cameras, the number of PP's will depend on the Axis video server and the PTZ driver used.

For relative PTZ cameras, only the PP's defined in the video server will be listed and available for use. The PTZ preset positions dialog box is activated from the camera settings dialog box by pressing the PTZ Preset Positions button.

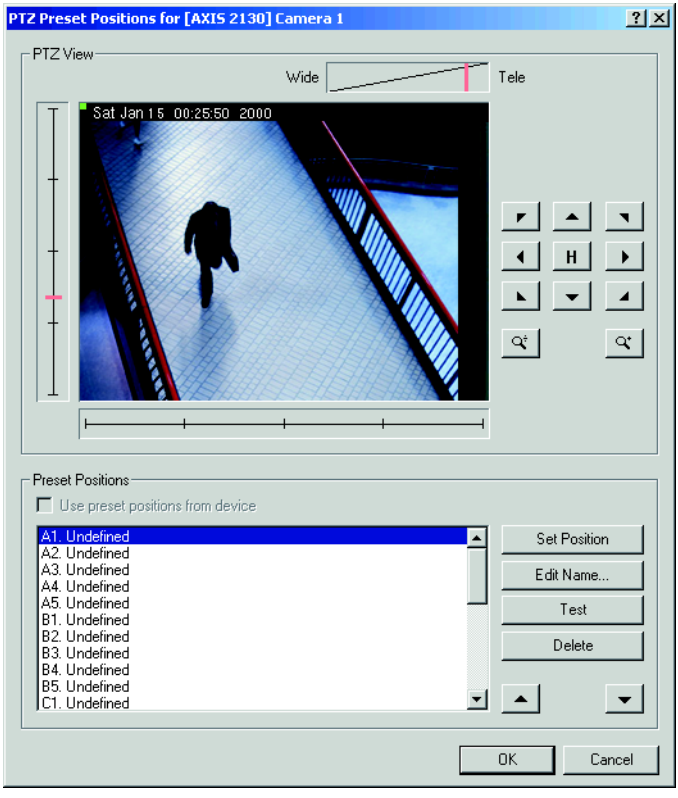

Figure 7 - The PTZ Preset Positions dialog box.

An absolute PTZ is device is one that is capable of keeping exact track of its own position, by using a coordinate system. It is thus possible to command it to "go to xx,yy." A relative PTZ device, however, can only move in relation to its current position, i.e. it is not possible to say "go to xx,yy" but only e.g. "go up" or "go left."

The following functionality is available (for absolute devices):

Wide/Tele bar - Click on the bar to set the zoom level for the camera. When clicking, the zoom level will be set to the level indicated by the cursor position on the bar.

Tilt (Vertical bar) - Click on the bar to set the tilt position for the camera. When clicking, the tilt level will be set to the level indicated by the cursor position on the bar.

Pan (Horizontal bar) - Click on the bar to set the pan position for the camera. When clicking, the pan level will be set to the level indicated by the cursor position on the bar.

Pan/Tilt buttons - Press the buttons in order to move the camera in the direction indicated by the button.

Zoom buttons - Press these buttons for extra, digital zoom.

Use Preset Positions from Device - For absolute PTZ cameras you can choose to use the PP's on the video server, or the ones defined in Axis Camera Recorder. For relative PTZ cameras on Axis video servers, the PP's defined PP's in the server will automatically be used, i.e. the option is disabled.

Set Position - Press this button when the relative PTZ camera has been moved to the desired position. This will save the position as the selected PP. Also used to change the position for an existing preset position to the current selected camera position. Note that names are truncated if too long for the preset position buttons in the Monitor application.

Edit Name... - Select a preset position in the list and press this button to change the name of the preset position.

Test - Move the camera to the selected preset position.

Delete - Remove the selected preset position from the list.

The preset position list is divided into five groups, A, B, C, D and E, each with 5 preset positions. In the Monitor application, the preset positions will be shown in these groups of five. Each group has its own button for fast access in the Monitor.

Use the up and down arrow buttons to change the order of the listed preset positions, by first selecting a preset and then clicking the arrows.

General Settings

The General Settings dialog box allows you to define various administrative settings, as described below.

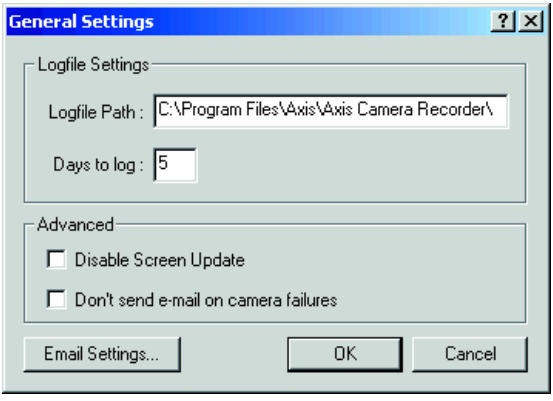

Figure 8 - The General Settings window.

Logfile Path - Specify the directory on the disk where the log files should be located. The specified directory must already exist, as it will not be created automatically.

Days to log - Specify the number of days to store the log files. A new log file will be created each day. Log files older than the specified number of days are automatically deleted.

Disable Screen Update - Select this option if the Monitor screen is not used on a daily basis, but only used when setting up the software. All Monitor screen updating will then be disabled. This can free up resources that may result in better system performance.

Don't send e-mail on camera failure - If e-mail has been enabled, the default setting for camera failures is to send e-mail whenever this occurs. Select this option to disable sending of e-mail.

Note: E-mail notifications of camera failure are sent at any time, i.e. regardless of the scheduled e-mail alert periods set in the Scheduler.

E-mail Settings... - Click this button to change the settings for e-mail alerts. See below.

E-mail Setup

The e-mail alerting system must be configured prior to use. The following settings must be configured;

Enable E-mail - Select to enable E-mail alerting. Note that camera and system failures will automatically be sent via e-mail if this has not been disabled under Advanced in the General settings window.

Advanced... - If a simple MAPI mail client is not available, SMTP e-mail can instead be used. SMTP can also be used if the mail client requires confirmation before sending e-mail.

Recipient(s) - Specify the e-mail address(es) for one or more recipients. Use semicolons (;) to separate multiple addresses, e.g. somebody@example.com; somebodyelse@example.com

Subject Text - Specify the text string to be used as the e-mail subject.

Message Text - Enter the text string that will be used as the e-mail body. The name of the camera that generated the alarm is automatically appended to the text.

Include Image - Check to include the image that generated the alert as an attachment in the e-mail.

Time btw. mails... - Specify the minimum number of minutes between alert e-mails for the individual camera, or set to 0 (zero) if each case of detected motion should result in an alert e-mail. A motion alert from a camera will not generate an e-mail if the minimum number of minutes specified has not elapsed since the last alert e-mail was sent.

Notes:
- During a longer period of constant motion, a large number of alarms will be generated. It might not be desirable to send an alert e-mail for every alarm.
- The Scheduler controls during which hours of the day motion alert e-mails are sent, and also which cameras will be generating them. See *Scheduling Camera Activity and Alert Periods,* on page 29 for more information.

Scheduling Camera Activity and Alert Periods

Using a a one-week calendar, the built-in Scheduler provides automatic control over important system functions. The main principle for scheduling is to click and drag in the window to create (or delete) a time period, during which various functions will be enabled:

- Time-controlled starting and stopping of the selected camera (Online)
- Event-controlled ((via external sensors) starting and stopping of the camera (Online)
- E-mail alerts on motion detection
- Sound alerts on motion detection

The Scheduler is activated from the main Administrator window, by pressing the Scheduler button. The following window appears:

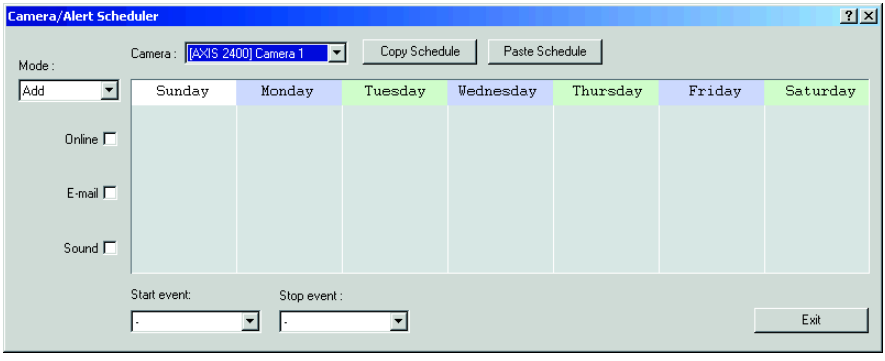

Figure 9 - The Scheduler window.

The following functions are available:

Mode - The selected mode determines if time periods are added or deleted when clicking and dragging the mouse in the window. Only the functions selected (Online, e-mail, Sound) will actually be affected by the operation.

Online - Check this box to create (or delete) online periods for the selected camera, i.e. when the camera will record. A camera can be controlled by time and/or events. See *Inputs and Outputs,* on page 39 for more information on sensors and events. A yellow bar indicates that the camera will be active for events (On Event), and a purple bar that the camera is active during the entire configured time period (Always).

E-mail - Check to enable (or delete) periods during which e-mail alerts will be sent for events for the selected camera. Before setting up e-mail alerts, e-mail must be configured in the General Settings dialog, also available from the main Administrator application. See *E-mail Setup,* on page 28.

Sound - Check to add (or delete) sound alerts for events for the selected camera. The sound file used must be located in the Axis Camera Recorder directory and the file must be named alarm.wav. To use a sound other than the default one, simply rename your new file alarm.wav.

Camera - Select a camera from the list. All operations performed in the Scheduler will only apply to the currently selected camera.

Copy Schedule - Creates a copy of the current schedule so that it can be used for other cameras.

Paste Schedule - Pastes the copied schedule setup to the currently selected camera. To copy to further cameras, simply select the next camera and paste it there as well. Take care when pasting, as schedules are overwritten with no warning.

Setting up Schedules - an Example

Follow these instructions to set up a simple schedule for putting cameras on line at set times and for triggering them by events and sending e-mail alerts at all other times.

1. From, the Mode drop-down list, select *Add*.
2. Check the box for Online, to add time periods in which the camera will be active.
3. To zoom in on the hours of the day, hold the cursor over the name of a day until the cursor changes to a magnifying glass and then click on the name.
4. Drag the cursor from Monday 08:00 to Friday 18:00 and release the mouse button.
5. A small dialog box will now appear. Select whether to activate the cameras for the whole period specified, i.e. Always, or only On event, i.e. when an alarm occurs, but still only within the specified period. Select Always.

6. Click the day name again to zoom out.
7. You should now see a purple bar that represents the times you specified. This bar indicates that the selected camera will be active during this period.

We now need to cover the rest of the week, but we now only want the camera to be triggered by events, i.e. when something out of the ordinary happens outside the working week.

8. Repeat steps 1 and 2 as above.
9. Drag the cursor to cover the period Sunday 00:00 to Monday 08:00.
10. In the dialog that appears, select On Event, to only activate the camera when there is an alarm and then select the events that will start and stop the camera from the Start event and Stop event drop-down lists. These events are defined in the I/O Setup section of the main Administrator window. For more information, see also *Inputs and Outputs,* on page 39.
11. The Scheduler will now contain a yellow bar that indicates an event-controlled period.
12. Repeat the above steps for the period from Friday 18:01 to Saturday 23:59.

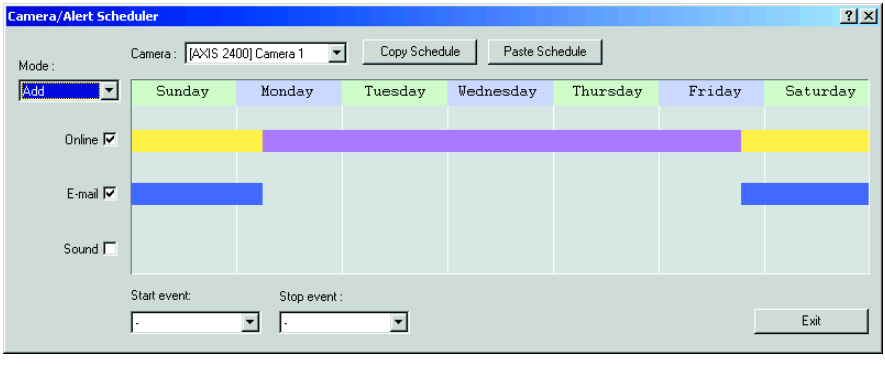

Figure 10 - The Scheduler window showing our example.

To complete the example, add e-mail alerting for the 2 event-controlled periods.

The Monitor Application

The Monitor application is the heart of the Axis Camera Recorder system, and is used for all normal day-to-day operation. Besides being the main user interface, the Monitor starts and stops the cameras, acquires and displays images, detects motion, saves images in the databases, sends alarms, etc.

Important!

> The surveillance system will only be active when the Monitor application is running. If the application is closed, images will not be recorded and alert messages will not be sent.

Start the Monitor from the Program Menu or from the shortcut on the desktop.

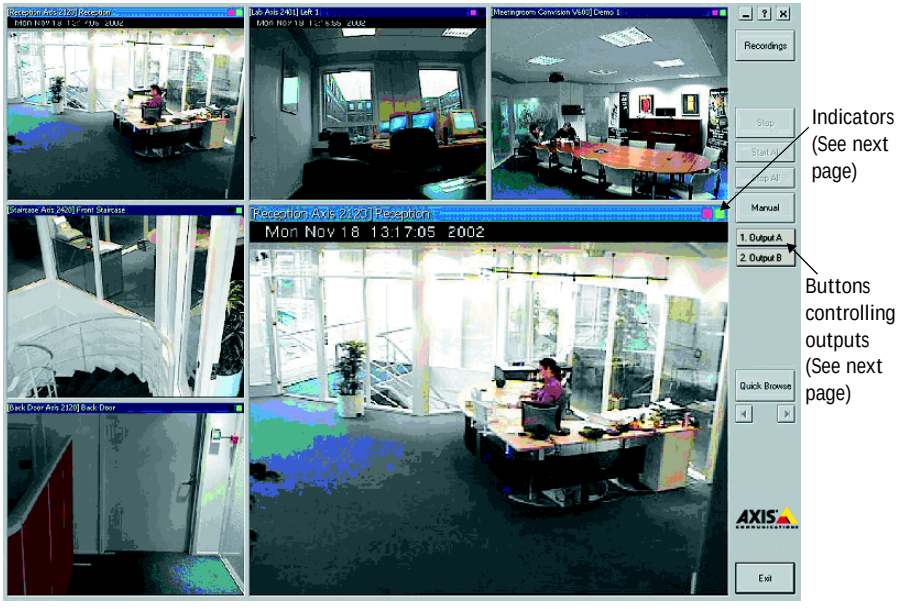

Figure 11 - The main Monitor window. Shown here with five monitor windows (each showing the image from the associated camera) and one Hot Spot window.

When the Monitor application is started, it automatically starts any cameras that have been specified in the Scheduler as being Online at that time. The Scheduler can be disabled and overridden by pressing the Manual button, which allows all the cameras to be started manually, one at a time, by clicking the Start button for the selected camera, or alternatively, all at once, by clicking the Start All button.

Note: For secure operation, cameras should be scheduled and not left in manual mode!

The Hot Spot window shows an enlarged view of the selected monitor. To display another monitor in the Hot Spot window, select the new window by clicking on it with the mouse.

Indicators

Each monitor window features one green and one red indicator. The green indicator flashes to shows that the camera is receiving images. A solid red indicator means that a motion detection event has occurred on this camera, even if there is no motion currently in the image. To reset the motion indicator, simply click in the image.

Tools and options available in the Monitor window

The main window provides tools for the following:

Recordings - Review your recordings in the Recordings Browser. See *Using the Recordings Browser,* on page 35.

PTZ Mode - Click this button to enable the Pan/Tilt/Zoom panel (button remains pressed). The PTZ panel is described later in this section.

Start/Stop - Press this button to start or stop the camera in the selected monitor. Only enabled in manual mode.

Start All - Starts all cameras at once. Only enabled in manual mode.

Stop All - Stops all cameras at once. Only enabled in manual mode.

Manual - Switches between Scheduler-controlled mode and manual mode. In Scheduler mode, the scheduler is responsible for starting and stopping the cameras. In manual mode the cameras can only be started and stopped manually. The system is in manual mode when the button is pushed in.

Buttons for manual control of outputs - These buttons are used to manually control any outputs that have been linked to the camera currently selected. The outputs controlled by these buttons can be on any device/camera in the system. To set up outputs, please see page 39. To link an output to a particular camera, please see page 21.

Quick Browse (QB) - Switches between on-line mode and quick browsing mode in the Hot Spot window. The Hot Spot window is in quick browsing mode when the button is pushed in.

QB Arrows - Use these buttons to quickly browse backwards or forwards in recordings from the camera currently shown in the Hot Spot window.

Exit - Pressing this button stops the Monitor and thereby stops all camera recording, all alerts, etc.

The Pan/Tilt/Zoom Panel

The PTZ panel is displayed when the PTZ mode button is in the "pressed" position. The buttons are only enabled if the selected camera has been set up as a PTZ camera.

Pan/Tilt Arrows - Use these arrows to move the camera in the direction indicated. Not all PTZ cameras can be controlled by all eight arrow buttons. Those that cannot be used will be disabled.

Home (H) - Click this button to move the camera to its home position. Not supported by all cameras.

Zoom In/Out (Camera zoom) - Click these buttons (magnifying glass) to zoom in and out of the image. This can also be done by moving the slider below the buttons.

Preset Position Buttons - If Preset Positions have been defined for the PTZ camera, these will appear in the PTZ panel when the camera is selected. The available preset positions (up to 25) are divided into 5 groups (A, B, C, D and E).

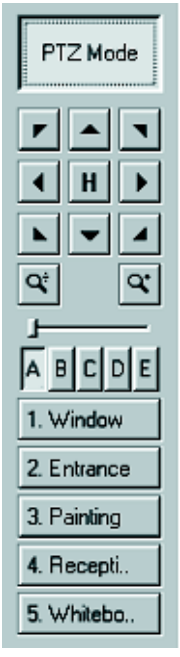

Figure 12 - The PTZ bar.

The Hot Spot window supports interactive Pan/Tilt/Zoom. When PTZ Mode is enabled, click in the Hot Spot window and hold down the mouse button while dragging. A slider (0-100%) indicating the zoom factor will appear. Move the slider to the desired zoom factor and release the mouse button. The camera will now center on the spot you pointed to and zoom with the factor you selected.

Using the Recordings Browser

The Recordings Browser is used to review or playback recordings, to print or export individual images, to create AVI video files, etc.

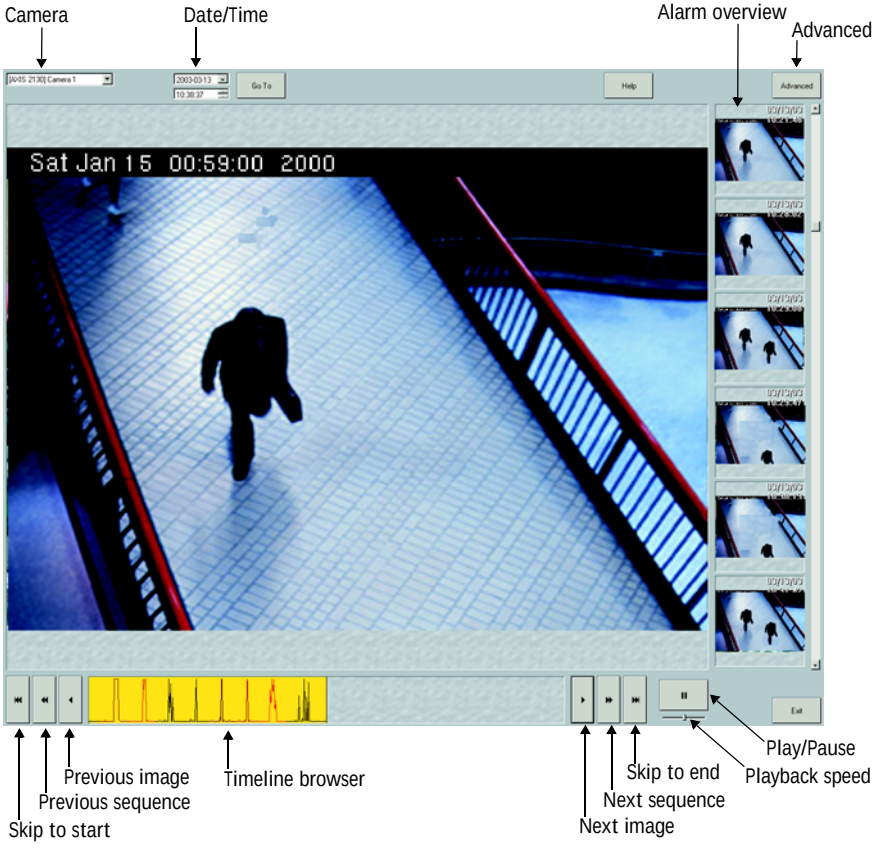

Figure 13 - The Recordings Browser.

The Recordings Browser window provides the following controls/buttons:

Camera - Select the camera to view recordings from.

Data/Time - Use these controls and press the Go To button to jump directly to the specified date and time. If no image was recorded for the specified time then the first recorded image found after the specified time will be shown. Note that when using times to view recordings, you can also select any other camera and view the recordings from that camera from the same time.

Alarm Overview - This overview will show you the first image with motion detected in each recorded sequence. You can use the overview to locate a specific sequence you may be looking for. Click on the overview image in order to jump directly to the time of the sequence.

Timeline Browser - The Timeline Browser graph shows each instance of detected motion in the recorded images. You can use your mouse to click and drag the graph to a new position, when you do this you will jump directly to the corresponding time. The 3 colors used in the timeline browser help to distinguish one period from the next.

Skip To Start/End - Click to jump to the start or end of the recording.

Previous/Next Sequence - Click to jump to the previous or next sequence containing detected motion.

Previous/Next Image - Click to jump to the previous or next recorded image.

Pause/Playback - Click to pause or resume playback. Playback is in real-time or at a minimum of one frame per second. The playback speed/direction can be changed by moving the slider shown below the pause button during playback.

Speed/Playback Direction Slider - During playback this slider will appear. Dragging the slider to the left or right will increase playback speed in that direction, i.e., when dragging to the right, normal playback will be speeded up and when dragging to the left, reverse playback will be speeded up. Releasing the slider returns the playback speed to real-time or to a minimum of one frame per second.

Advanced button - Switches between alarm overview mode and advanced mode. The Recordings Browser will be in advanced mode when the button is *pressed*. See also *Features in Advanced Mode,* on page 37.

Features in Advanced Mode

Advanced mode allows you to print or export individual images, create AVI video files and zoom into or out of the images. You will see the following information and buttons when the Advanced button is pressed:

- Records - Reads the number of images currently stored for the selected camera.
- Record Limit - Reads the maximum size of the image database for the selected camera. If the automatic database resizing feature is in use, the temporary database size will be shown here.
- Start Time: Set - Find the first image in the sequence to be exported as single JPEGs or included in an AVI. Then press this button to set the time of that image as the Start Time.
- End Time: Set - Find the last image in the sequence to be exported as single JPEGs or included in an AVI. Then press this button to set the time of that image as the End Time.
- Export - Press this button to export single original JPEGs for the selected camera. Images in the range from Start time to End time are exported.

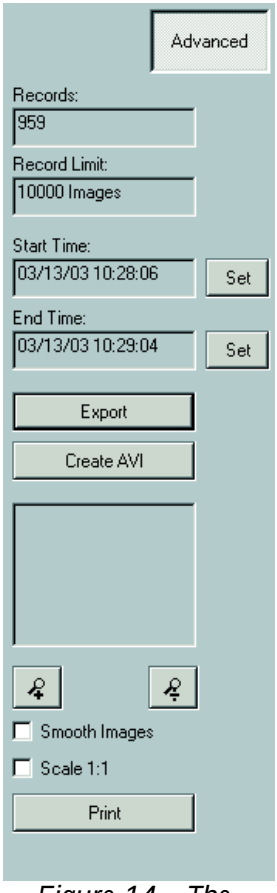

Figure 14 - The Advanced bar.

- Create AVI - Press this button to create an AVI file from the images in the range from start time to end time. Select the AVI file name to create in the Create AVI dialog and optionally include a timestamp. Once the file has been named, the dialog will ask for the compression codec to use. Note that Axis Camera Recorder provides no codecs - only codecs already installed on the system will be available. The codec used to create the file must also be available on the computer where the AVI is played back.

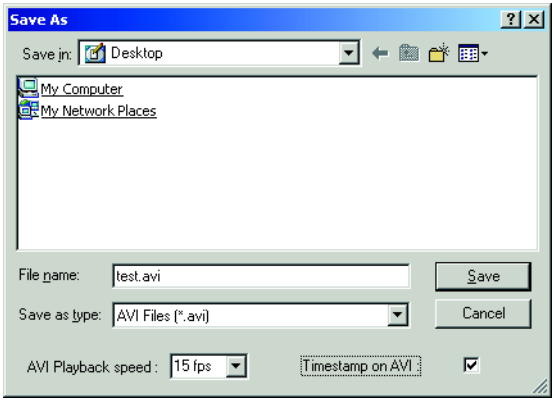

Figure 15 - The Create AVI dialog.

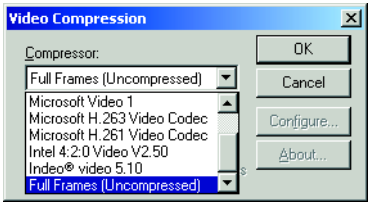

Figure 16 - Examples of codecs

- Zoom In/Zoom Out (Digital zoom) - Press these buttons to zoom in or out of the image. If you have zoomed into the image you can use the mouse to drag the image so that the correct part of it is shown in the view.
- Smooth Image - Select this to electronically enhance the image. This feature is especially valuable when zooming digitally into the image.
- Scale 1:1 - Show images in the original size as retrieved from the device. Note that if the image size is larger than the available resolution of the browser window, then it will not be possible to show the image in Scale 1:1.
- Print - Click to print the selected image on the default printer. To use another printer, first select it as the default. After the button is clicked it will also be possible to add the name of the operator, the company and notes to the printed document. The time and date of the image will automatically be added.

Appendix A - Inputs and Outputs

Advanced Control with Input Devices

Axis Network Cameras and Video Servers support the use of various types of input devices, for example, passive infrared sensors, or door and window contacts. Please refer to the device's manual for a description of how to connect input devices.

By using the device's inputs, Axis Camera Recorder allows you to control camera activity, to send e-mail alerts and to activate the device's output ports. One or more events can be defined for each input, and a start and stop event can be selected from the defined events for each of the monitors.

Example

First we need to define an event based on the input from an external device. This is called an *external event*. For each external event one or more *timer events* can be defined. A timer event occurs after a specified time has elapsed after the related external event occurred. Follow these steps to set up camera activity triggered by events controlled by sensor input:

1. Open the Administrator application and press the I/O Setup button.
2. In the Defined Events window, select the camera or video server to which the external sensor is connected and click the Add New Event button.
3. Depending on the number of inputs available on the selected device, the Add New Event dialog box or the Multiple Input Events dialog appears. Select the type of event to use, either from the drop-down box, or, if multiple inputs are available, from the list. In the Multiple Event setup, click the (>>) button to add the event.
4. Enter a name (e.g. Door opens) for the external event and check the Send e-mail if this event occurs box if this is required.
5. Click the OK button in the dialog box to return to the Event Settings dialog box.

A plus sign (+) will now appear to the left of the device to which the sensor is connected. Click this to see the defined external event entry. The event name appears under the device, which indicates that this event is controlled through that device.

We will now create a *timer event*, which is tied to the new external event;

1. Select the external event we created previously by clicking on it in the Defined Events window. Click the Add New Event button and the New Timer Event dialog appears.
2. Enter (in seconds or minutes) a value in the field for Timer Event Occurs After.
3. Give the timer event a name (e.g. Door opens - timer) and click the OK button to return to the Event Settings dialog.

Now click the plus sign (+) to the left of the external event to see the timer event entry. The timer event name appears under the external event name, which indicates that it is controlled by the external event. Click the OK button to return to the main Administrator window.

We will now use our events to activate a camera. Click the Scheduler button and the Camera/Alert Scheduler dialog appears:

1. From the Camera drop-down list, select the camera to be controlled by the created events.
2. From the Start Event drop-down list, select the event that will start the camera (Door opens), and from the Stop Event drop-down list select the event that stops the camera (Door opens - timer).

As the camera can be controlled by events, but also at set times, we must specify when the camera should be controlled by the start and stop events. In the Camera/Alert Scheduler dialog box do the following:

3. Set the Mode to Set to specify the event period.
4. Check the Online box and uncheck the E-mail box. Any time periods added will now only apply to the Online function.
5. In the Scheduler week view, click on the day on which the event-controlled period starts.
6. Now find the start time of the event-controlled period and click and drag the mouse to the end time.

7. You will now be asked to define the selected time period as *On Events* or *Always*. Select *On Events* and the selected time period turns yellow in the Scheduler overview.

When online event periods have been set, click the OK button in the Camera/Alert Scheduler dialog box to start using the event settings and to return to the main window. The camera will now start and stop on the specified events, but only when in the specified event period.

Advanced Settings (in I/O Setup)

As inputs are received in different ways from one device to another, it is sometimes necessary to adjust various port settings. By clicking the Advanced button, the FTP port, the Alert port (TCP/IP) and the SMTP port can all be set. The polling frequency can be set for those devices requiring input polling.

Setting up Output Events

Output events are set up in much the same way as input events. Simply select the device, click Add new output event... and then select the correct output and specify how long it will be active for when triggered.

I/O Control

Clicking on the I/O Control button brings up a group of panels from where it is possible to define which events will control which outputs. An event can control multiple outputs, and an output can be controlled by multiple events.

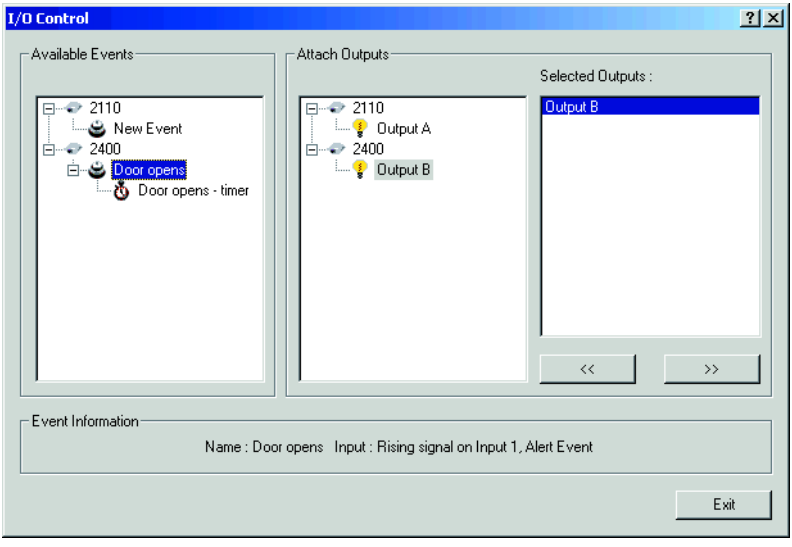

Figure 17 - The I/O Control window.

To attach an event to an output - select the event from the first panel, and then the output from the second. Then click the >> button to set the attachment. When selecting an event in the first panel, the third panel displays the outputs attached to this event.

Note that an event can control any available output in the system.